#5 Declaration 9/30/01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	
Satoshi OGATA et al.	:	Group Art Unit: 1723
Serial No.: 09/600,203	:	
Filed: August 9, 2000	:	Examiner: M. SAVAGE
For: FILTER CARTRIDGE		

DECLARATION UNDER 37 C.F.R. § 1.132

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

I, Osamu YAMAGUCHI, a Japanese citizen of 251, Tateiri-cho, Moriyama-shi, Shiga-ken, Japan, declare:

That I finished the study on engineering research in a graduate course of Tokushima University in March of 1994;

That I have been employed by CHISSO CORPORATION of Kitaku, Osaka, Japan, the Assignee of the above-identified U.S. patent application, and I have been engaged in research and development on polypropylene molded products, mainly on polypropylene filters from April 1994 up to now;

That I am a joint inventor of the invention disclosed in the above-identified U.S. patent application, and hence, I am fully familiar therewith; and

That in order to show distinction between the claimed subject matter and the reference (EP'381) cited in the examination of the above-identified U.S. patent application, a comparative experiment was conducted under

my supervision as follows.

1. Comparative Experiment

A comparative experiment was conducted according to the following procedure (herein referred to as Comparative Example A) so as to compare a filter cartridge of EP'381 with that of the present invention:

Terms used in the comparative experiment have the same meanings as defined in the Description of the present application. A composite melt-blown web having an average fiber diameter of 2 dtex and a basis weight of 22 g/m^2 was prepared by spinning a polypropylene having a melting point of 165°C and a melt flow rate of 35 g/10 min. as the core component and a high density polyethylene having a melting point of 133°C and a melt flow rate of 25 g/10 min. as the sheath component, the composite ratio of the sheath component and the core component being 50/50 by weight. The temperature used was 200°C for both components, using a sheath-core type nozzle for melt-blowing method followed by entangling the spun fibers by through-air method. The web was wound in a layer form around the same perforated cylinder as used in Example 1 of the present application while heating at 145°C by means of far infrared ray heater to obtain a cylindrical filter cartridge having a major diameter of 62 mm and a minor diameter of 30 mm. The physical properties of this filter was measured in the same manner as in the Description of the present application. The results are shown in the table below together with the corresponding data of Examples 4 and 11, and Comparative Example 3 which are disclosed in the Description of the present application.

2. Discussion

By Comparative Example A, we intend to present a filter cartridge made by a melt-blowing method described in EP'381, structure of which is apparently analogous with

that of Example 11 of the present application.

That is, the nonwoven used in Comparative Example A has the same basis weight and thickness as those of Example 11, and resins and fineness of the constitutional fibers are also identical. In addition, filter void rate is almost the same.

However, the resultant filter cartridges are extremely different in their performance as a filter.

According to the table shown below, the initial trapped particle diameter of Comparative Example A is 26 μm, while that of Example 11 is 12 μm. Likewise, the initial pressure loss is 0.025 MPa and 0.003 MPa, the trapped particle diameter in 0.2 MPa is 46 μm and 12 μm, the filter life is 180 minutes and 230 minutes, and fiber falling of the former is "fair" and that of the latter is "good".

These differences come from the following reasons.

The large initial pressure loss in the filter of Comparative Example A is due to the random disposition of constitutional fibers as shown in Fig. 16 of the present application, which makes the liquid permeability deteriorated.

The fiber falling is due to cut-out of fibers by roping or shot, which makes fibers easily snapped when the fiber diameter of the melt-blown web used is large. In this connection, the difference between trapped particle diameter in 0.2 MPa (46 μm) and initial trapped particle diameter(26 μm) is so large in Comparative Example A. This is because the fiber diameter for a melt-blown fiber as large as 2 dtex renders the adhesion strength lowered when short fibers are used.

Thus, it is evident that the filter cartridge of Example 11 is far excellent in performance when compared with that of Comparative Example A.

Further, the filter cartridge described in Comparative Example 3 is prepared by such a method as in JP'811 using a

staple nonwoven from a split fiber.

Thus, it is also found from the table that the filter cartridge of Example 11 is far excellent in performance when compared with that of Comparative Example 3.

Accordingly, it is concluded that the filter cartridge of the present invention is superior to that of EP'381 or JP'811 in its performance as a filter.

Table

	Example 4	Example 11	Comparative Example 3	Comparative Example A
Basis weight (g/m^2)	22	22	22	22
Thickness (μm)	200	200	200	200
Fineness (dtex)	2	2	0.5	2
Adhesion at intersection	Emboss	Emboss	Water jet	Through-air
Resin	PP	HDPE/PP	HDPE/PP	HDPE/PP
Slit width (mm)	50	50	50	250
Yarn space (mm)	1	1	1	-
Filter void rate (%)	82	81	77	80
Initial trapped particle diameter (μm)	13	12	13	26
Initial pressure loss (MPa)	0.003	0.003	0.010	0.025
Trapped particle diameter in 0.2 MPa (μm)	14	12	10.1	46
Filter life (minute)	225	230	80	180
Bubbling	good	good	fair	good
Fiber Falling	good	good	bad	fair

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

This 11th day of September, 2001

Osamu Yamaguchi

Osamu YAMAGUCHI